

Precision Drop Tester: Repeatable, Measurable Shock Events



Applications

*Design more 'rugged' systems
and equipment*

*Conduct product trouble-
shooting*

Design shock treatments

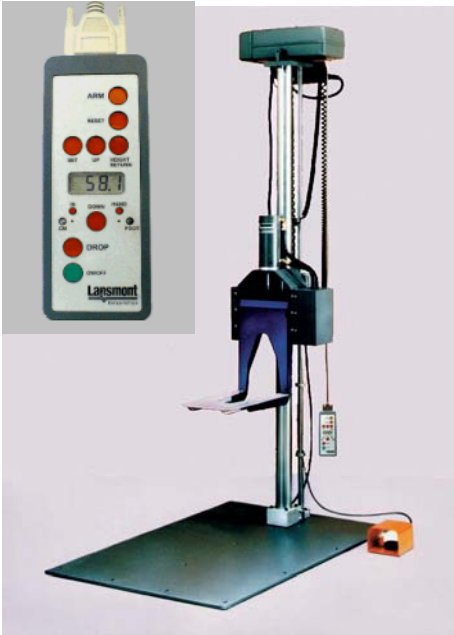
Validate treatments

Provide quality assurance

E-A-R's precision drop tester is designed to simulate the drops and physical shock that devices undergo in everyday use or handling. The equipment allows repeated drops from identical heights and positions. Along with high speed video equipment (See NTC-102, High-Speed Video System: Ensures Product Reliability) and companion computer software, this precision device is part of a system that can help identify why products fail due to shock. This information enables E-A-R's applications engineers to design an optimized solution to minimize product failure and improve ruggedness and reliability. It also results in speedier problem-solving, by reducing the overall time needed to diagnose the problem, design a solution and test its efficacy. The shock-testing system typically is used to validate the engineers' design recommendations.

E-A-R's drop tester can accommodate a wide variety of shapes and sizes of test items. Subjects can be positioned to fall flat, on edge or on a corner. An electric hoist, operated by a digital handheld controller (see inset) raises and lowers the drop leaf assembly to preset drop heights, helping to eliminate operator error.

The "shock event" is captured onto a PC with software that allows E-A-R engineers to perform data analysis, to capture acceleration vs. time waveforms and to provide a graphic representation of the dynamic occurrences. The combination of ultra-slow-motion pictures and comprehensive data provide a powerful tool for ruggedized design.



E-A-R's precision drop tester is part of a system that helps provide data and analysis to define shock and vibration problems and to design solutions.

Key Features of the Precision Drop Tester

- Infinitely adjustable drop heights, from 12 inches to 144 inches (305 mm to 3,657 mm).
- Electric hoist operates via a digital handheld controller.
- Drop activated either by the handheld controller or a foot-activated drop switch, each of which is deactivated, as a safety mechanism, when the other is in operation.
- Accommodates drop subjects weighing up to 110 pounds (49 kg).
- Includes a "goose neck" feature for package edge and corner positioning.
- Meets industry standard specification of ± 2 degrees of accuracy.
- Video system provides 16-channel high-speed data acquisition.
- Companion computer software digitizes the analog signals from the dynamic tests and then uses these data to perform analysis and create displays.
- Software allows non-destructive filtering, as well as analysis of peak accelerations, pulse duration and velocity changes.
- Other analyses include deflection calculations, tri-axial resultant vector magnitudes, shock response spectrum (SRS), FFT, position vs. time, acceleration vs. time, acceleration vs. position, force vs. deflection and impact energy calculations.
- Drop testing systems allows ASCII data export.